

PATENT CLAIMS

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1. Serial data bus having a data line (12) for the transmission of electrical signals (48, 50) representing bit states and having a plurality of multi-master subscribers (14, 16) between which
5 messages can be exchanged via the data line (12) in an event-driven manner according to the broadcast principle,

characterised in that

at least two subscribers (14, 16) have a
10 transmission/reception head (18) which can be inductively coupled to the data line (12) and via which electrical signals (50) can be tapped contactlessly from the data line and transmitted onto it, and in that an amplifier (36) which receives electrical signals (48)
15 that have been transmitted inductively onto the data line (12) by the at least two subscribers (14, 16), and couples them back into the data line (12) after their amplification, is DC-connected to the data line (12).

2. Data bus according to Claim 1, characterised in
20 that the messages contain priority bits by the reception of which, in the event of simultaneous message transmissions by a plurality of subscribers (14, 16), a subscriber (14, 16) can

determine whether it has the priority to transmit data bits by means of a comparison with priority bits which it itself transmits.

3. Data bus according to Claim 2, characterised in
5 that a subscriber (14, 16) does not have the priority to transmit data bits when it receives a signal that represents a dominant logical bit state and it approximately simultaneously transmits a signal that represents a recessive logical bit
10 state.
4. Data bus according to one of the preceding claims, characterised in that the signal representing the dominant bit state is a current pulse and the signal representing the recessive bit state is the
15 absence of a current pulse.
5. Data bus according to one of the preceding claims, characterised in that the transmission/reception head (18) comprises:
 - a) a transmission coil (30),
 - 20 b) a reception coil (34),
 - c) a transmission module (24) by which electrical signals (32), which can be applied

to the transmission coil (30), can be generated from digital information,

- 5 d) a reception module (22) by which digital information can be generated from electrical signals (50) that can be tapped by the reception coil (34), and
- 10 e) a logic unit (20), connected to the transmission module (24) and the reception module (22), for collating and evaluating messages from digital information received by the reception module (22) and for generating digital information for the transmission module (24).
- 15 6. Data bus according to Claim 2 or 3 and according to Claim 5, characterised in that the priority of messages can be determined by the logic unit (20).
- 20 7. Data bus according to one of the preceding claims, characterised in that after reception of a signal (48) from one of the at least two subscribers (14, 16), the amplified signal (50) can be transmitted onto the data line (12) by the amplifier (36) within 50%, preferably within 25%, of the cycle length which lies at least between two signals transmitted onto the data line (12) by one
- 25 of the at least two subscribers (16, 18).

8. Data bus according to one of the preceding claims, characterised in that the messages have the format established in the CAN standard.
9. Data bus according to one of the preceding claims,
5 characterised in that at least one subscriber (14, 16) is arranged so that it can travel along the data line (12).
10. Motion system having a first part and a second part, which is arranged mobile relative to the
10 first part, characterised in that subscribers of a data bus according to Claim 9 are arranged statically on the two parts.
11. Motion system according to Claim 10, characterised
15 in that it is designed as a track-bound transport system with a track (62) and a plurality of vehicles (64, 66) which travel along the track (62), the transport system (60) comprising, for communication between the vehicles (64, 66), a
20 data bus (10) according to Claim 9 whose data line (12) is arranged along the track (62) of the transport system (60) and whose subscribers are the vehicles (64, 66).
12. Motion system according to Claim 11, characterised in that at least one vehicle comprises a vehicle

control (78), which is connected to the transmission/reception head (18).

13. Motion system according to Claim 11 or 12, characterised in that the amplifier (36) is
5 connected to a control unit (44; 441, 442, 443) for controlling the vehicles (64, 66) along the data bus (10).
14. Motion system according to Claim 13, characterised in that the amplifier (36; 361, 362, 363) is
10 connected to the control unit (44; 441, 442, 443) via a CAN bus (821, 822, 823).
15. Motion system according to Claim 13 or 14, characterised in that it is subdivided into a plurality of segments (601, 602, 603) which
15 respectively comprise a data bus (10) having a control unit (441, 442, 443), and in that the control unit (441, 442, 443) for the individual segments is connected to a superordinate central control (94).
- 20 16. Motion system according to Claim 15, characterised in that the track (62) for the vehicles (64, 66) extends over a plurality of segments (601, 602, 603) so that vehicles (64, 66) can travel over segment boundaries.

17. Motion system according to one of Claims 11 to 16, characterised in that it is designed as an overhead conveyor system (60) for transporting objects, in particular motor vehicle bodywork (60).
- 5 18. Serial method for the event-driven transmission of messages between a plurality of multi-master subscribers (14, 16) according to the broadcast principle via a data bus (10), characterised by the following steps:
- 10 a) contactless transmission of an electrical signal (52) by a subscriber (14) onto a data line (12) of the data bus (10) via a transmission/reception head (18), coupled inductively to the data line (12), of the
- 15 subscriber (14);
- b) reception of the electrical signal (48) attenuated by the inductive transmission by an amplifier (36) DC-connected to the data line (12);
- 20 c) amplification of the received signal (48) in the amplifier (36);
- d) coupling of the amplified signal (50) onto the data line (12);

- e) reception of the amplified signal (50)
transmitted onto the data line (12) by a
transmission/reception head (18), coupled
inductively to the data line (12), of another
5 subscriber (16).
19. Method according to Claim 18, characterised in that
when a subscriber (14, 16) simultaneously transmits
a message and receives a message, it determines
whether it has the priority to transmit data bits
10 by means of a comparison of received priority bits
and self-transmitted priority bits.
20. Method according to Claim 21, characterised in that
a subscriber does not have the priority to transmit
data bits when it receives a signal that represents
15 a dominant logical bit state and it approximately
simultaneously transmits a signal that represents a
recessive logical bit state.
21. Method according to Claim 20, characterised in that
the signal representing the dominant bit state is a
20 current pulse and the signal representing the
recessive bit state is the absence of a current
pulse.
22. Method according to one of Claims 18 to 21,
characterised in that the messages have the format
25 established in the CAN standard.